



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,162	03/27/2001	Tidhar D. Shalon	IN-0012-1	3895
23379	7590	02/05/2004	EXAMINER	
RICHARD ARON OSMAN SCIENCE AND TECHNOLOGY LAW GROUP 75 DENISE DRIVE HILLSBOROUGH, CA 94010			LUDLOW, JAN M	
			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,162

Applicant(s)

SHALON ET AL.

Examiner

Jan M. Ludlow

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

1. Claims 1-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Throughout the claims "wire bonding capillary" is indefinite because it is unclear what structural limitations are intended by "wire bonding"—is a particular material of construction, dimensional limit or other feature required which defines a wire bonding capillary over any other capillary?

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

5. Determining the scope and contents of the prior art.
6. Ascertaining the differences between the prior art and the claims at issue.
7. Resolving the level of ordinary skill in the pertinent art.
8. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derwent Acc. No. 1989-343524 relating to JP 01255238, hereafter "JP".

JP teaches washing a wire bonding capillary with aqueous solution, iodine solution and silicon etching liquid.

JP fails to explicitly teach any of the solutions inside the capillary.

It would have been obvious to contact all surfaces of the capillary used in bonding with washing solution in order to wash the surfaces likely to be dirty.

Alternatively, it is the examiner's position that even if only the outer surface is intentionally washed, upon contacting the wash solution with the outside of the bore, some of the fluid would inherently be drawn inside the capillary by capillary action.

11. Claims 1-10, 12-23, 26-27, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little et al ('925).

12. Little teaches method and apparatus for preparing arrays by dispensing low volume droplets on a substrate. Capillary needles 62 with bores open at both ends are provided in a pin block. Biasing springs 74 restrict motion. The needles can be made of steel, silica, polymers, or any other suitable material (bridge cols. 7-8). A robotic system is used to move the pin block to a source plate containing wells (larger than a capillary and in fluid contact with the capillary), and then to the substrate, which can be

silicon, plastic, metal or any suitable material, flat or pitted (col. 9, lines 10-17).

Solutions of DNA can be dispensed, and the capillaries may be filled by capillarity (col. 9, lines 40-65)

13. Little fails to explicitly teach "printing".

14. It would have been obvious to one of ordinary skill in the art to provide the small volumes of solution to a flat surface as taught by Little. It is the examiner's position that such dispensing constitutes "printing" as used in the instant application. With respect to "wire bonding capillary" in that applicant has disclosed no special properties of wire bonding capillaries defining over ordinary capillaries, it is the examiner's position that the capillaries of Little are structurally capable of use as wire bonding capillaries and/or constitute wire bonding capillaries to the extent the term is definite.

15. Claims 1-23, 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feygin. (5,957,167)

16. Feygin teaches a method and apparatus for printing biological substances on a substrate. A capillary tube with a slit in it (slit not precluded by the instant claims) can be decelerated to print a droplet (col. 3, line 23). A spring biasing device is shown in Figure 3. Plural dispensing members and automated operation are taught (col. 5, lines 55-65). With respect to reservoirs, the upper end of the capillary is a reservoir; alternatively, the source well into which the capillary device is dipped for loading is a non-capillary reservoir in fluid contact with the capillary during loading.

17. Feygin fails to explicitly teach open capillary bore ends open to atmosphere.

18. It would have been obvious to provide the capillary tube embodiment in the device of Figure 6 in order in order to deliver fluids as taught by Feygin. Note that a capillary tube is inherently open at both ends and the device of Figure 6 does not cover the end of the printing tube. It would have been obvious to provide positioners and other known moving expedients in order to automate the system as taught by Feygin. It would have been obvious to make the heads replaceable in order to remove damaged or contaminated heads as was known in the printer and pipetting art. With respect to "wire bonding capillary" in that applicant has disclosed no special properties of wire bonding capillaries defining over ordinary capillaries, it is the examiner's position that the capillaries of Feygin are structurally capable of use as wire bonding capillaries and/or constitute wire bonding capillaries to the extent the term is definite.

19. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feygin as applied to claims 1-23, 26-31 above and further in view of Thomas.

20. Feygin fails to teach the preservative.

21. Thomas teaches a reagent transfer device having a resilient rubber pad which is abutted with the transfer device outlet opening to prevent evaporation form the device during storage (col. 3, lines 59-64).

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an evaporation prevention device such as a rubber pad for abutting the capillary openings in the device of Feygin in order to prevent evaporation of reagents from the openings during storage as taught by Thomas.

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
24. Chapman et al. additionally teaches prior art wire binding capillaries with molten (liquid) metal in the tip of the capillary (Figure 5).
25. Pauwels et al, having an effective filing date one day before that of applicant, teaches contact printing with a gang of capillaries open at both ends (Ex. 2).
26. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.
27. Applicant's arguments filed November 4, 2003 have been fully considered but they are not persuasive.

Applicant argues that "wire bonding capillary" is definite because it is a term of art. This argument is not found persuasive in the instant application because the issue at hand is whether a prior art capillary, which is not *referred to* as a "wire bonding capillary", constitutes a wire binding capillary as that term is defined in the instant specification and/or art. In that applicant argues that the prior art references applied do not constitute wire bonding capillaries, the claim is unclear because the examiner finds no difference between the structure of the prior art applied and the broadest reasonable interpretation of "wire bonding capillary." See, e.g., page 9, lines 3-5 of the instant specification, where a wire bonding capillary is described as having an axial bore with two open ends, with a printing tip comprising one of the openings. This limitation is taught or suggested by the prior art as explained above. Thus, if the prior art capillaries are not wire bonding capillaries, it is unclear what is intended by this term, because that

examiner finds no definition in the specification that defines over the open printing capillaries taught or suggested. Similarly, of the art cited by applicant in the Response filed November 4, 2003, lines 3-5 of claim 1 of Chapman (6158647) are interpreted as described a general wire bonding capillary, with subsequent language defining particular characteristics of the particular capillary claimed. See also Figure 1 of US Patent Nos. 5971248 and 5996877 and Figure 5 of US Patent No. 4513190, which show capillaries markedly similar to those in the references cited by the examiner.

Applicant argues that the prior art rejections are invalid because the prior art is not directed to "wire binding" capillaries, but as explained above, neither the instant specification nor the prior art define this term in such a way as to distinguish over any other capillary structurally capable of having a thin wire inserted therethrough.

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

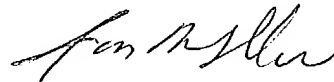
Art Unit: 1743

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (571) 272-1260. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jan M. Ludlow
Primary Examiner
Art Unit 1743

Jml
January 26, 2004